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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,378

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EXAMINER

NGUYEN, VU ANH

ART UNIT

PAPER NUMBER

4171

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,378	<b>Applicant(s)</b> GIJSMAN ET AL.	
	<b>Examiner</b> Vu Nguyen	<b>Art Unit</b> 4171	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>01/05/2006</u> . | 6) <input checked="" type="checkbox"/> Other: <u>NPL (1 document)</u> .                 |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 1 is objected to because of the following informalities: A comma is misplaced. Appropriate correction is required.
2. Claim 4 is objected to because of the following informalities: Grammatical error. Appropriate correction is required.
3. Claim 9 is objected to because of the following informalities: The decimal numbers are in inconsistent format. Appropriate correction is required.
4. Claims 10 and 11 are objected to because of the following informalities: A "to" is missing after "according". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101/112***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
7. Claims 12 and 15 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

Claims 12 and 15 recite "Use of a..." which is too general to be classified as a specific and substantial asserted utility or a well established utility.

Claims 12 and 15 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2, 5-6, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohkawa et al. (U.S. 4,891,399).

10. Regarding claims 1 and 2, the applicants claim a process for preparing a molding composition comprising melt-mixing of a thermoplastic polymer, a non-metallic fibrous reinforcing agent, and elementary iron having a weight-average particle size of 450  $\mu\text{m}$  or less to form a composition wherein the thermoplastic polymer forms a continuous phase. Claim 2 narrows the scope of claim 1 by limiting the size of the iron particles to 250  $\mu\text{m}$  or less.

11. Ohkawa et al. (Ohkawa, hereafter) teaches a process for preparing a molding composition comprising melt-mixing (col. 12, line 66) of a thermoplastic polymer, glass

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fibers and carbon fibers (Abstract), and iron particulates having particle size of 0.4-10  $\mu\text{m}$  (col. 6, lines 10-12 and 21-24). Since the disclosed thermoplastic polymer (col. 4, lines 11-25) includes homopolymers such as PA-6 and since no phase separation is mentioned, the disclosed thermoplastic polymer is expected to form a continuous phase.

12. Regarding claim 5, which depends on claim 1 and further specifies the thermoplastic polymer to be a semi-crystalline or crystalline polymer having a melting temperature of at least 180°C or an amorphous polymer having a glass transition temperature of at least 180°C, the disclosed thermoplastic polymer includes PA-6 where the melt-mixing is done at 200-300°C (col. 12, lines 64 and 68). Although the prior art is silent as to the crystallinity of the polymer or its melting or glass-transition temperature, it is reasonable to expect that the disclosed thermoplastic polymers include those exhibiting the recited properties because, for example, PA-6 is normally a crystalline polymer with a melting point over 200°C (See attached MSDS).

13. Regarding claim 6, the applicants claim a molding composition comprising a thermoplastic polymer as a continuous phase, a non-metallic fibrous reinforcing agent, and a heat stabilizer in the form of finely dispersed elementary iron having a weight-average size of 450  $\mu\text{m}$  or less. The disclosed mold composition comprises a thermoplastic polymer, non-metallic fibrous reinforcing agents, and iron particulates having particle size of 0.4-10  $\mu\text{m}$  as discussed above. Further, the iron powder is thoroughly mixed with the melting thermoplastic polymer (col. 12, line 66). The iron powder is, therefore, expected to be finely dispersed in the polymer matrix. The iron

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powder is employed as metallic filler to enhance the heat stability of the composition (col. 1, Compare the 3rd and 4th paragraphs). That is, the iron filler is employed as heat stabilizer.

14. Regarding claim 8, which depends on claim 6 and further claims a filler or another additive, the disclosed composition further includes a filler (col. 9, lines 43-66) and/or other additives (col. 10, lines 1-5).

***Claim Rejections - 35 USC § 102/103***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 10 and 11 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ohkawa et al. (U.S. 4,891,399).

18. Regarding claims 10 and 11, claim 10 depends on claim 6 and further specifies the thermoplastic polymer to be an aliphatic polyamide having a HDT, measured according to ISO 75/A, of at least 220°C, and having a tensile strength and/or

elongation at break, tested on a test bar with a thickness of 4 mm in a tensile test according to ISO 527 at 23°C, which is retained for at least 60% after heat-ageing for 800 hours at 215°C. Claim 11 is similar to claim 10 except that the thermoplastic polymer is recited as a semi-aromatic polyamide and the test numbers are: at least 250°C (HDT), 50%, and 230°C.

19. The molding composition taught by Ohkawa, as discussed above, comprises a thermoplastic polymer which includes a number of well-known polyamides such as PA-6, PA-12, PA-6,6, PA-6,10, PA-6,12, and aliphatic, aromatic, and semi-aromatic polyamides (col. 4, lines 11-25). The prior art is silent as to an HDT value or a tensile strength/elongation test for the disclosed polymers. It is noted that the HDT values can change, depending on the testing conditions (e.g., pressure). Even though the prior art is silent on the recited properties, the disclosed invention is directed to a thermoplastic composition having improved heat resistance and dimensional stability (col. 1, lines 28). Moreover, the prior art does not specify a limit on the types of polyamide resins employed in the disclosed invention. Consequently, unless shown otherwise, it is reasonable to expect the disclosed thermoplastic polymers to include those having the recited properties.

Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. **In re Best**, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); **In re Fitzgerald**, 205 USPQ 594 (CCPA 1980).

***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

22. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkawa et al. (U.S. 4,891,399).

23. Regarding claims 3 and 4, claim 3 depends on claim 1 and further recites that the elementary iron is added in the form of a masterbatch comprising finely dispersed elementary iron in a carrier polymer. Claim 4 recites that both the thermoplastic polymer and the carrier polymer in claim 3 are a polyamide.

24. Ohkawa teaches a process of preparing a mold composition comprising melt-mixing a thermoplastic polymer, including polyamide (col. 4, lines 11-26), non-metallic fibrous reinforcing agents, and iron particulates having particle size of 0.4-10  $\mu\text{m}$  as discussed above.



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25. Although the process employed by Ohkawa involves direct melt-mixing of the metallic fillers with the thermoplastic polyamide rather than preparing a dispersion of the metallic fillers in a carrier polyamide before adding it to the thermoplastic polyamide, the latter process would have been obvious to a person having ordinary skill in the art at the time the invention was made as an optimization process, which enables better control of the mixing and the temperatures of the molding ingredients, and affords more uniform (or homogeneous) dispersion of the metallic fillers in the molding composition.

26. Claims 7, 9, and 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkawa et al. (U.S. 4,891,399) in view of El Sayed et al. (U.S. 5,965,652).

**Regarding claims 7 and 9:**

27. Claim 7 specifies the composition in claim 6 to comprise 100 pbw thermoplastic polymer, 5-300 pbw reinforcing agent, 0.01-20 pbw iron, and 0-30 pbw of a carrier polymer (where pbw stands for "parts by weight"). Claim 9 specifies the composition of claim 6 to consist of (a) 94.95-29.95 wt% thermoplastic polymer, (b) 5-70 wt% reinforcing fibers, (c) 0.05-16 wt% elementary iron, (d) 0-16 wt% carrier polymer, (e) 0-69.95 wt% inorganic filler, and (f) 0-16 wt% other additive, wherein  $(b+c+e)/(\text{total}) = 0.75$  or less,  $(d+f)/(a+d+f) = 0.30$  or less, and  $(a+b+c+d+e+f) = \text{total} = 100 \text{ wt\%}$ .

28. Ohkawa teaches a mold composition comprising a thermoplastic polymer, non-metallic fibrous reinforcing agents, iron particulates, inorganic fillers, and other additives as discussed above. The composition comprises 2-70 parts of a thermoplastic polymer

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and 98-30 parts of a mixture of glass fibers, iron powder, inorganic fillers, and other additives (col. 2, lines 63-68; col. 6, lines 35; col. 7, lines 1-3). The reference also discloses numerous uses and applications of the molding composition (col. 10, lines 19-42).

**Regarding claims 12-20:**

29. Claim 12 recites use of the composition of claim 7 for the preparation of a molded part. Claim 13 claims a molded part comprising the composition of claim 7. Claim 14 claims an assembled article comprising the molded part of claim 13. Claim 15 recites use of the molded part of claim 13 in a machine, an engine, an electric or electronic installation. Claim 16 recites an electric or electronic installation comprising the molded part of claim 13. Claim 17 recites a machine, engine, an electric or electronic installation comprising the molded part of claim 13. Claim 18 claims an automotive vehicle, general transport means, domestic appliance, or general industry installation, comprising the molded part of claim 13. Claim 19 recites an electric or electronic installation comprising the assembled article of claim 14. Claim 20 recites an automotive vehicle, general transport means, domestic appliance, or general industry installation, comprising the machine or engine of claim 17.

30. Corresponding to the limitations set forth in these claims, Ohkawa teaches that the disclosed composition is "suitable for molding various shaped articles used in a wide variety of applications including, for example, structural parts in electric and electronic instruments, industrial machines and transportation machines such as automobiles as

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well as furnitures and other household commodities” (col. 1, lines 9-15). Numerous other specific applications of the disclosed composition are taught (col. 10, lines 19-42).

31. Clearly, Ohkawa teaches all the limitations set forth in claims 7, 9, 12-20 except that, compared to the composition in claims 7 and 9, the disclosed composition has higher content of iron powder and lower concentration of fibrous reinforcing agent.

32. El Sayed et al. (El Sayed, hereafter) teaches a process of preparing a molding composition comprising melt-mixing (col. 4, lines 12-15) a thermoplastic polyamide (col. 1, lines 9-10), colloidal copper as heat stabilizer (col. 2, lines 19-24), reinforcing fibers (col. 2, lines 53-56), and other additives (col. 2, lines 57-67). The process also includes the preparation of highly concentrated dispersion of the heat stabilizer in a polyamide which is prepared *in situ* before mixing the dispersion with a commercially available polyamide (col. 3, lines 12-18). The composition comprises 69.74 wt% PA-6, 30 wt% glass fibers (col. 4, Table 1, Example 5; Table 2, Example 10) and 10-2,500 ppm of fine-particle elemental copper (col. 2, lines 35-37). In other words, the amount of elemental copper can be up to 0.25 wt% relative to 100 wt% of the composition. It is noted that the disclosed composition, except for the nature of the metallic fillers, is a specific example of the compositions recited in claims 7 and 9.

33. **[Motivation]** One skilled in the art would know that the amounts of the metallic fillers and the non-metallic fibrous reinforcing agents (such as glass fibers) in a molding composition should be determined in consideration of the type of applications. If a composition contains high content of a metallic filler but low concentration of a fibrous reinforcing agent, the heat stability of the resultant molded articles may be improved but

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their impact strength is low. Further, Ohkawa teaches that the disclosed composition “can give not only shaped articles having complicated configuration as molded but also shaped articles suitable for secondary work-ing to meet various applications **by adequately modifying the blending ratio of the components**” (col. 10, lines 23-28. Emphasis added).

34. In light of the teachings by Ohkawa and El Sayed and considering that, as far as heat stabilizers are concerned, elemental copper and elemental iron are functionally equivalent and can be used interchangeably as taught by Ohkawa (col. 1, line 38), it would have been obvious to a person having ordinary skill in the art at the time the invention was made to adapt the constitutive percentages taught by El Sayed in the composition taught by Ohkawa to obtain an iron-containing molding composition having not only good heat stability but also improved impact strength due to an increase content of the fibrous reinforcing agents.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Ling-Siu Choi/  
Primary Examiner, Art Unit 1796

Vu Nguyen  
Examiner  
Art Unit 4171